

GENERAL ORDERS, }
No. 42.

WAR DEPARTMENT,
ADJUTANT GENERAL'S OFFICE,
Washington, February 2, 1864.

The following Regulations for the care of Field-works and the government of their Garrisons, prepared by Brigadier General BARRY, Inspector of Artillery, U. S. A., are published for the government of all concerned :

1. It is the duty of the Commanding Officer of each work to provide for the care of the armament and the safety and serviceable condition of the magazines, ammunition, implements, and equipments; and, by frequent personal inspections, to secure the observance of the rules prescribed for this purpose.

2. The fixed armament, consisting of the heavy guns and those the positions of which are prescribed, will be numbered in a regular series, commencing with the first gun on the right of the entrance of the main gate. Where there are platforms temporarily unoccupied by guns, they will be numbered in the regular series. The ammunition will be kept in the magazines, with the exception of a few stands of grape, canister, and solid shot, which will be piled near the guns.

3. The gun-carriages will be kept clean, and all axles and journals well lubricated. They will be traversed daily, and never be allowed to rest for two successive days on the same part of the traverse circle. If the gun-carriage does not move easily on the *chassis*, the tongue will be occasionally greased. The upper carriage should not rest habitually on the same part of the chassis.

4. The *elevating screw* and its *box* will be kept clean and well greased. When the guns are not in use, the screw will be run down as far as it will go, the breech of the piece being first raised until the muzzle is sufficiently depressed to prevent water running into it, and kept in that position by a wooden quoin or block. The *tompion* should be kept in the muzzle, and the apron over the vent.

5. The piece is not to be kept habitually loaded. It will be time to load when the enemy appears, or when special orders to that effect are given.

6. The Commanding Officer will see that a shed is constructed for the implements and equipments. For each drill these will be issued to the gunners by the ordnance sergeant, or other non-commissioned officer acting as such, who will receive and put them away after the drill is over, and be at all times responsible to the Commanding Officer for their safety and serviceable condition, and that the supply is adequate. When sheds cannot be provided, the implements will be kept near the pieces, or in the bomb-proofs. The *equipments* (haversacks, tube-pouch, &c.) may be kept at the entrance of the magazine, where they will be sheltered. Platforms for projectiles will be laid near the guns; for canisters, a couple of pieces of scantling for skids will answer. A water-shed, made by joining two boards together at the edges, should be placed over them. When the wooden sabots become wet they swell and burst the canisters, so that they cannot be put into the gun. When this happens, dry the sabot until it shrinks sufficiently for the canister edges to be brought together and tacked.

7. When not supplied by the Engineer Department, materials for constructing the sheds and for skidding will be furnished by the Quartermaster's Department, on requisitions made to the Chief of Artillery.

8. The magazines must be frequently aired *in dry weather*. For this purpose, the ventilators and doors must be opened after 9 a. m., and must be closed, at latest, two hours before sunset. The ammunition for different classes of guns will be carefully assorted, and the shelves, boxes, or barrels containing each kind, plainly marked. When there is more than one magazine, the ammunition will be so distributed as to be near to the particular guns for which it is provided. Cartridges must be moved, and, if necessary, rolled once a week, to prevent *caking* of the powder. In doing this, care must be taken not to pulverize the grains. *Friction primers* must be kept in the tin packing boxes, and carefully protected from moisture. They will be frequently examined, and dried by exposure to the sun. This must always be done immediately after wet weather of long continuance. The supply of friction primers for each gun must be fifty per cent. greater than the number of rounds of ammunition provided for it. A dozen primers will always be kept in the tube-pouches in use at each gun. Three lanyards will be provided for each gun, one of which will be kept in store; the other two in the tube-pouches. As soon as received, the *hooks* will be tested to see if they are sufficiently small to enter the eye of the primer, and yet strong enough for use.

9. In order that practice may be had in the use of friction primers, authority is given to expend on drill five per gun each month. These primers will always be taken from those longest at the post.

10. There should be one lantern for every three or four guns; and two *good globe lanterns* for each magazine.

11. No person will be allowed to enter the magazines except on duty, and then every precaution against accidents will be taken. Lights must always be in glass lanterns, and carried only by the person in charge of the magazine. Swords, pistols, canes, spurs, &c., will not be admitted, no matter what may be the rank of the person carrying them. Socks or moccasins will be worn, if they can be procured; if they cannot, then all persons must enter with stocking-feet. No fire or smoking will be allowed in the vicinity when the doors or ventilators are open. *Too many precautions cannot possibly be taken to avoid the chances of an explosion.*

A copy of this paragraph, legibly written, will be conspicuously posted near or on the doors of every magazine.

12. Companies will be assigned to guns in such proportions as will furnish at least *two*, preferably three, reliefs in working them, and sufficient men in addition for supplying ammunition from the magazines. From fifteen to twenty men should therefore be assigned *to each gun*, and instructed in its use. Companies should habitually serve the same guns, each man being assigned a special number at the gun, and thoroughly instructed in all its duties. As occasion offers, all of the officers and enlisted men should be instructed at each of the different kinds of gun at the post, as well as in the duties of all the numbers at each gun. Every night at retreat or tattoo, the men who are to man the guns in case of a night attack should be paraded at their pieces and inspected, to see that all their equipments, implements, and ammunition are in good order, and the gun in serviceable condition and easy working order. The men so stationed should "call off" their numbers before being dismissed. In case of alarm at night, all should repair at once to their posts, equip themselves, and await orders, without losing time by forming upon their company or battalion parade grounds.

13. Each gun should be under charge of a non-commissioned officer, and to every two or three guns should be assigned a Lieutenant, who will be responsible to the Captain for their serviceable condition at all

times. The Captain will be responsible to the Commanding Officer for the condition of the pieces, and the instruction of the men of his company. Artillery drills will be frequent until all of the men are well instructed, and there will never be less than *one artillery* drill per day when the weather will permit, nor will any officer be excused from these drills unless it is unavoidable. For action, all the cannoneers not actually serving the guns will be provided with muskets, and will be stationed near the guns to which they belong, for service on the banquettes or elsewhere, in case of assaults.

14. Each company should be supplied with three copies of the *Tactics for Heavy Artillery*, and rigidly adhere to its directions. *Tables of Ranges* will be found in the work. One copy of *Instructions for Field Artillery* should be supplied to each company. All authorized books can be obtained on written application to the Chief of Artillery, who will obtain them from the Adjutant General of the Army. The books so drawn are the property of the United States for the use of the company, and will be accounted for on the Muster Rolls.

15. The Commanding Officer will make himself conversant with the approaches to his work, the distance to each prominent point commanded by his guns, the nature of the ground between them and his post, and the most probable points of attack upon it. He will also make it his duty to see that all of his officers, and, as far as possible, his non-commissioned officers, are thoroughly acquainted with these matters. The distances will be ascertained by actual measurement, and not left to conjecture. *Tables of Ranges* or *Distances* for each point, and the corresponding elevation, according to the nature of the projectile, with the proper length or time of the fuze, when shell or case-shot are used, will be made out for *each gun*, and furnished to the officer and non-commissioned officers serving it. These tables should be painted upon boards, and securely fastened in a conspicuous place near the gun. As these tables differ for different kinds of gun, the same men should be permanently assigned to the same piece.

16. The projectiles should be used in their proper order. At a distance, *solid shot*; then, *shells* or *case-shot*, especially if firing at troops *in line*; *canister* or *grape* is for use only at short ranges. When columns are approaching so that they can be taken in direction of their length, or *very* obliquely, solid shot is generally the best projectile, because of its greater accuracy and penetrating power. If the column

consists of cavalry, some shells or case-shot will be useful, from the disorder their bursting produces among the horses; but shells and case-shot should not be used against any troops when moving *rapidly*. The *absolute* distances at which the projectiles can be used with effect vary with the description and calibre of the gun, and can be ascertained only by consulting the Tables of Ranges. The prominent points on the approaches to the works should be designated, their distances noted, and directions drawn up for the different kinds of ammunition to be used at each gun for these different points. During the drills, the attention of the chiefs of pieces and gunners should be frequently drawn to this subject.

17. Commanding Officers will pay special attention to the police and preservation of the works. All filth will be promptly removed, and the drainage particularly attended to. No one should be allowed to walk on the parapets, or move or sit upon the gabions, barrels, or sand bags that may be placed upon them. When injuries occur to the earth-works, they should be repaired as quickly as possible by the garrison of the work. If of a serious nature, they should be at once reported to the *Engineer Officer* in charge of the work. *All injuries to the magazines or platforms of the guns will be promptly reported as soon as observed.* The *abattis* being a most important portion of the work, must be always well looked to and kept in perfect order.

18. Special written or printed instructions as to the supply of ammunition at the different posts, and the proportion for the different classes of guns, will be furnished by the Chief of Artillery to the Commanders of posts. Instructions will also be furnished as to the special objects of each work, on proper application for this purpose to the Chief Engineer or Chief of Artillery.

19. No persons not officially connected with the garrisons of the field-works will be allowed to enter them, except such as visit them on duty, or who have passes signed by competent authority; nor will any person except commissioned officers, or those whose duty requires them to do so, be allowed to enter the magazine, or touch the guns their implements or equipments.

20. The garrison can greatly improve the work by sodding the slopes of the parapet, and those of the ramps and banquettes, or by sowing grass seed on the superior slope, first covering it with surface soil. The grass-covered or sodded portions of the parapets, traverses,

magazines, &c., should be occasionally watered in dry weather, and the grass be kept closely cut. Early in the spring and late in the autumn they should be covered with manure.

21. As a great deal of powder is wasted in unnecessary salutes, attention is called to paragraph 268 of Army Regulations, edition of 1861-'3:

Paragraph 268.—A General Officer will be saluted but once in a year at each post, and only when notice of his intention to visit the post has been given.

22. The practice of building fires on the open parades, for cooking and other purposes, is prohibited, as it endangers the magazines.

23. The armament of a fort having been once established, will not be changed except by authority of the Commander of the District, Geographical Department, or Army Corps, and then only on consultation with the Chiefs of Engineers and Artillery.

24. The machinery of the Whitworth, or other breech-loading guns, will not be used except by special orders from the Commanding Officer of the post.

25. Experience having conclusively shown that rifled guns, of large calibre especially, must be subjected to most careful treatment and skillful management in order to secure their maximum efficiency, both in range and penetration, and especially their maximum endurance, the attention of all officers using rifled guns of large calibres is called to the following rules: Sponges well saturated with oil shall alone be used; and for this purpose the necessary supply of oil shall be provided for all batteries of position in which rifled guns form the part or whole of its armament. A little grease or slush upon the base of the projectile adds much to its certainty, and should be always used when possible. The bores of the guns should be washed, and the grooves cleaned of all residuum and dirt subsequent to the firing, after the gun has cooled. Great care must be taken to send the projectile home in loading, that no space may be left between the projectile and the cartridge.

Before using shells, unless already loaded and fuzeed, they must be carefully inspected both on their exterior and interior; and scrapers should be used to clear the cavity of all moulding sand before charging the shell. Special attention should be given to the insertion of the

fuze, and the threads of the fuze hole should be carefully cleaned before screwing in the fuze. In all Parrott projectiles it should be carefully observed that the brass ring or cup is properly swedged, and that, in the case of the ring, the cavities between it and the projectile are not clogged with dirt or sand.

In loading shells care will be taken to fill them entirely with powder, leaving no vacant space after the fuze is screwed in.

For the 10, 20, and 30-pounder Parrott guns, powder of too large a grain should not be used. The best powder for the projecting charge of these guns is what is called "mortar powder."

26. Pole-straps and pole-pads of field limbers, not belonging to horsed batteries, are to be kept in the implement-room or in the trays of the limber chest. They should be occasionally washed and oiled, as prescribed for the care of harness in field artillery tactics.

27. The forts will be inspected daily by their Commanding Officers; and by the Brigade, Division, District, or Department Commanders, and by the Chief of Artillery, as frequently as possible. Particular attention will be paid, at all inspections, to the drill and discipline of the garrison and police of the work; to the condition of the armament, ammunition and magazines; and as to whether the proper supply of ammunition, implements, &c., is on hand at the Post.

INSTRUCTIONS FOR FIRING.

1. The firing in action should be deliberate—never more than will admit of accurate pointing. A few shots effectively thrown is better than a larger number badly directed. The object of killing is to inspire terror so as to deter or drive off the enemy, and precision of fire and consequent *certainty* of execution is infinitely more important in effecting this than a great noise, rapid firing, and less proportional execution.

2. To secure accuracy of fire, the ground in the neighborhood must be well examined, and the distance to the different prominent points within the field covered by *each gun measured and noted*.

The gunners and cannoneers should be informed of these distances, and in the drills the gun should be accurately pointed at the objects noted in succession, the gunner designating it, calling the distance in yards, and the corresponding elevation in *minutes* and *degrees*, until all the distances and corresponding elevations are familiar to the men. When hollow projectiles are used, the time of flight corresponding to

the distance must be given to the man who goes for the projectile. He tells the ordnance sergeant, or the man who furnishes the ammunition, and the latter cuts the fuze to burn the required time.

3. The gunner is responsible for the aiming. He must therefore know the distance to each prominent object in the field covered by his gun, the elevation required to reach that point, and the time of flight of the shell or case-shot corresponding to each distance or elevation. He must have a table of these ranges, taken from the Heavy Artillery Tactics, pages 236 to 247,* (edition of 1862.)

4. These tables will be promptly prepared under the direction of the Commanding Officer, and copies furnished for each gun, and used habitually in the drills. They will be examined and verified by the Chief of Artillery.

* NOTE.—(The last table on page 240 should read 8-inch sea-coast *howitzer* on barbette carriage, instead of 8-inch sea-coast *mortar*.)

For example: The cartridges for the 24-pounder guns all weigh six pounds, as issued in the Defences of Washington. The table (page 236) therefore applies as follows:

Twenty-four Pounder Gun on Siege or Barbette Carriage.

Cartridge.	Ball.	Elevation.	Range.				
Lbs.		° ' "	Yards.				
6	Shot.	0 0	412	That is, the <i>bore</i> (not line of sight) being level, a range of 400 yards.			
6	"	1 0	842	1 degree elevation, range about 850 yards.			
6	"	1 30	953	1½	do.	do.	950 do.
6	"	2 0	1,147	2	do.	do.	1,150 do.
6	"	3 0	1,417	3	do.	do.	1,400 do.
6	"	4 0	1,666	4	do.	do.	1,660 do.
6	"	5 0	1,901	5	do.	do.	1,900 do. The extreme range of 24-pounder round shot.

Thus, supposing the enemy at a point 1,000 yards distant, by looking at the table it will be observed that 950 yards require 1° 30' elevation; 1,150 yards require 2°; therefore, elevate a very little—5' to 10' over 1° 30', or simply give 1° 30' full.

5. The attention of all officers in charge of artillery in the works is directed to the articles in the Tactics on "*Pointing guns and howitzers*," "*Night firing*," &c., pages 76 to 90.

6. Commanding Officers of the works will keep themselves accurately informed of the amount and kinds of ammunition in the magazines. The supply must always be kept up to the amount prescribed by the Chief of Artillery or other competent authority. When it is less than that amount, a special report of the fact will be made to the Chief of Artillery, with requisitions for the ammunition necessary to complete the supply. Commanding Officers will also see that the necessary equipments are always on hand for the service of all the guns, as prescribed in the Tactics or in General Orders.

7. Hand grenades are intended to be used against the enemy when he has reached such parts of the defenses (the bottom of the ditch for example) as are not covered by the guns, or by the muskets of the infantry posted on the banquettes.

8. After the enemy has passed the abattis and jumped into the ditch, hand grenades will be used; and then, if he mounts the parapet, he must be met there with muskets. A resolute defense against assault must also be made by posting men with muskets so as to fire over the tops of traverses, bomb-proofs, or magazines.

BY COMMAND OF MAJOR GENERAL HALLECK:

E. D. TOWNSEND,
Assistant Adjutant General.

OFFICIAL:

Assistant Adjutant General.